

HISTORIC PROPERTY INVENTORY FORM

IDENTIFICATION SECTION

Field Site No. 3718-F **OAHP No.** **Date Recorded** 13 Sept 1993
Site Name Historic Sodium Treatment Building **Revisions** 23 Jan 1995
Common Alkali Metal Treatment and Storage Facility 21 May 1997
Field Recorder M.S. Gerber
Owner's Name U.S. Department of Energy, Richland Operations Office
Address P.O. Box 550
City/State/Zip Code Richland/ WA/99352

Status

☒ Survey/Inventory
☐ National Register
☐ State Register
☐ Determined Eligible
☐ Determined Not Eligible
☐ Other (HABS, HAER, NHL)
☐ Local Designation

Photography

HCRL
Photography Neg. No. Roll 183, frame 5
(Roll No. & Frame No.) Roll 186, frames 35-37
View of All exterior facades
Date 20 December 1994
Photo at right: Roll 183, frame 5
View of east facade

Classification

☐ District ☐ Site ☒ Building ☐ Structure ☐ Object
District Status ☒ NR ☐ SR ☐ LR ☐ INV
Contributing ☒ **Non-Contributing** ☐
District/Thematic Nomination Name Hanford Site Manhattan Project and Cold War Era Historic District

Description Section

Materials & Features/Structural Types

Building Type Industry
Plan Rectangular
Structural System Steel frame
No. of Stories One

Roof Type

☒ Gable ☐ Hip
☐ Flat ☐ Pyramidal
☐ Monitor ☐ Other (specify)
☐ Gambrel
☐ Shed

Cladding (exterior Wall Surfaces)

☐ Log
☐ Horizontal Wood Siding
Rustic/Drop ☐
Clapboard ☐
☐ Wood Shingle
☐ Board and Batten
☐ Vertical Board
☐ Asbestos/Asphalt
☐ Brick
☐ Stone
☐ Stucco
☐ Terra Cotta
☐ Concrete/Concrete Block
☐ Vinyl/Aluminum Siding
☒ Metal (specify) Corrugated steel
☐ Other (specify)

Roof Material

☐ Wood Shingle
☐ Wood Shake
☐ Composition
☐ Slate
☐ Tar/Built-up
☐ Tile
☒ Metal (specify) Corrugated steel
☐ Other (specify)
☐ Not visible

Foundation

☐ Log ☐ Concrete
☐ Post & Pier ☒ Block
☐ Stone ☐ Poured
☐ Brick ☐ Other (specify)
☐ Not visible

Integrity

(Include detailed description in
Description of Physical Appearance)

	Intact	Slight	Moderate	Extensive
Changes to plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changes to windows	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changes to original cladding	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changes to interior	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

State of Washington, Department of Community Development
Office of Archaeology and Historic Preservation
111 21st Avenue Southwest, Post Office Box 48343
Olympia, Washington 98504-8343 (206)753-4011

LOCATION SECTION

Address Building 3718-F, 300 Area
City/Town/County/Zip Code Richland/Benton County/99352
Twp. 10 N Range 28 E Section 11 I/4 Section NW 1/4 1/4 Sec SE
Tax No./Parcel No. **Acreage**
Quadrangle or map name Richland, Washington Quad. - 7.5 min series 1986
UTM References Zone 11 Easting Northing
Plat/Block/Lot
Supplemental Map(s)



High Styles/Forms (Check one or more of the following)

<input type="checkbox"/> Greek Revival	<input type="checkbox"/> Spanish Colonial Revival/Mediterranean
<input type="checkbox"/> Gothic Revival	<input type="checkbox"/> Tudor Revival
<input type="checkbox"/> Italianate	<input type="checkbox"/> Craftsman/Arts & Crafts
<input type="checkbox"/> Second Empire	<input type="checkbox"/> Bungalow
<input type="checkbox"/> Romanesque Revival	<input type="checkbox"/> Prairie Style
<input type="checkbox"/> Stick Style	<input type="checkbox"/> Art Deco/Art Moderne
<input type="checkbox"/> Queen Anne	<input type="checkbox"/> Rustic Style
<input type="checkbox"/> Shingle Style	<input type="checkbox"/> International Style
<input type="checkbox"/> Colonial Revival	<input type="checkbox"/> Northwest Style
<input type="checkbox"/> Beaux Arts/Neoclassical	<input type="checkbox"/> Commercial Vernacular
<input type="checkbox"/> Chicago/Commercial Style	<input type="checkbox"/> Residential Vernacular (see below)
<input type="checkbox"/> American Foursquare	<input checked="" type="checkbox"/> Other (specify)
<input type="checkbox"/> Mission Revival	<input type="checkbox"/> Industrial Vernacular

Vernacular House Types

<input type="checkbox"/> Gable Front	<input type="checkbox"/> Cross Gable
<input type="checkbox"/> Gable Front and Wing	<input type="checkbox"/> Pyramidal/Hipped
<input type="checkbox"/> Side Gable	<input type="checkbox"/> Other (specify)

NARRATIVE SECTION

Study Unit Themes (check one or more of the following)

☐ Agriculture
☐ Architecture/Landscape Architecture
☐ Arts
☐ Commerce
☐ Communications
☐ Community Planning/Development

☐ Conservation
☐ Education
☐ Entertainment/Recreation
☐ Ethnic Heritage (specify) _____
☐ Health/Medicine
☐ Manufacturing/Industry
☐ Military

☐ Politics/Government/Law
☐ Religion
☒ Science & Engineering
☐ Social Movements/Organizations
☐ Transportation
☒ Other (specify) Cold War Era
☒ **Study Unit Sub-Theme(s)** Research & Development,
Facilities Support (Chemical Storage)

Statement of Significance

Date of Construction 1962 Architect/Engineer/Builder Vitro Corporation

☒ In the opinion of the surveyor, this property appears to meet the criteria of the National Register of Historic Places.

☒ In the opinion of the surveyor, this property is located in a potential historic district (National and/or local).

The 3718-F facility was constructed in 1968 as the important Sodium Treatment Building. Beginning in 1973, its primary mission was to support the Fast Flux Test Facility design by burning the residues and wastes resulting from sodium burn experiments. A primary concern surrounding sodium and other alkali metals is purity, and purity levels determine the temperature at which various specimens of sodium will melt. Since the Fast Flux Test Facility was a prototype reactor, built to test various coolant and fuel parameters, as well as other technologies, many experiments were conducted to understand the properties of sodium of various purity levels.

Most of the sodium loop experiments at the Hanford Site in support of the Fast Flux Test Facility development took place in the 337 High Bay, 335, 335-A, and 336 Buildings. The tests developed sodium purification and characterization equipment, probed sodium impurity chemistry, studied the thermal properties of various sodium compounds, experimented with leak detection devices, and proved maintenance techniques for sodium/alkali metal systems. The 3718-F Building is located just north of the 337 High Bay, 335, 335-A, and 336 Buildings. When experiments in the sodium loops in these buildings were completed, the residues and solid sodium chunks left behind would be taken to the 3718-F Building to be burned off, or reacted in water or ethylene glycol, and disposed through the drain in the concrete pad to the 300 Area retention basins. Such experiments took place throughout the 1970s. Various cleanup and cleanout activities took place in the experimental buildings through 1988, resulting in more burn activities for the 3718-F Building. Another function of the 3718-F Building was to store pure, metallic sodium, NaK, lithium, and phosphorus. When liquid samples of these metals were needed for experiments in other facilities, the solid stores located in the 3718-F Building would be heated in the burn shed and a sample portion would be drawn and delivered for the designated experiment.

In the mid-1970s, the Hanford Fire Department, as well as the Fast Flux Test Facility designers, became interested in how to fight sodium fires. As a result of this concern, sodium fire test facilities were located in the 105-DR Building, and in the 221-T Building. Again, the residues from test burns in these facilities was taken to the 3718-F facility for burn up or reaction, and disposal. Special fire protection suits for the Hanford Fire Department were developed as a result of this work. Sodium burn disposal work peaked in the 3718-F facility first in the 1970s, and then peaked again during cleanout operations in various sodium loop and fire test facilities in the mid-1980s. No sodium work has taken place in the facility since 1987.

The 3718-F Building also served as a waste disposal facility in support of the experimental development of the United States' prototypical, demonstration model "breeder reactor" (the Fast Flux Test Facility). At the time that it was being developed, the breeder technology was seen as a key solution to the electric power generation needs of the world. The sodium coolant properties needed to be carefully and thoroughly understood in order for the Fast Flux Test Facility program to succeed. Because the emphasis was on "clean" energy (non-fossil fuel energy), it was especially important that the Fast Flux Test Facility's own development manage its wastes carefully and set a high example in waste management and safety. The burning of the waste sodium and other alkali metal from the Fast Flux Test Facility experimental development therefore was essential. The 3718-F facility was a key facility in performing this waste management mission. It is therefore the conclusion of the U.S. Department of Energy that Building 3718-F is eligible for inclusion in the National Register of Historic Places under Criterion A as a contributing property within the Hanford Site Manhattan Project and Cold War Era Historic District.

HISTORIC PROPERTY INVENTORY FORM

Building 3718-F (Continuation Sheet 1 of 1)

Description of Physical Appearance

The 3718-F structure is a 48 foot long by 20 feet wide, single story structure built of corrugated steel over wood framing, with a concrete slab floor. It is oriented on a north-south axis. Building 3718-F consists of a storage area in the north side and a tool and operation area in the south side. It has an adjoining concrete pad to the east measuring 48 feet by 25 feet, that contains a steel burn shed nine feet wide by 12 feet long, two large steel reaction tanks (3718-F Treatment Tanks 1 and 2), and a grated trench leading to a drain pipe. The drain pipe connects to the 300 Area process sewer system. It has five small windows on each of the east and west sides, and an entry door on the east side. The burn shed has a metal roll-up door that occupies nearly the entire south side of the shed, and a small, bullet-proof viewing window on the north side. During the burn process within the shed, waste alkali metals were placed in 18-square-inch burn pans which were in turn placed in a 40-inch by 30-inch catch pan. The western-most tank (3718-F Treatment Tank 1) was used as an alcohol reaction tank. It measures 24 feet long by 10.5 inches wide by 10 inches deep and is raised on three-foot legs. A second alcohol tank has since been removed from the facility. The eastern-most tank (3718-F Treatment Tank 2) is a stainless steel, water reaction tank measuring 12 feet long by 29.5 inches wide by 28 inches deep. A round, steel fume scrubber is located on the concrete pad just east of the burn shed and is connected to the shed via piping through a roof vent in the shed. This cylindrical stack consists of an American Air Filter Company compactor which acted as a wet dust collector, moisture separator, and a high-pressure, high-velocity exhaust fan. The dust collector dissolves the sodium oxide smoke that is passed through the fume scrubber, and the moisture separator removes this solution (sodium hydroxide) from the exhaust stream. The effluent is then discharged to the sewer system. A water scrubbing filtration arrangement connects to the piping between the stack and the shed. The plan and exterior characteristics of the building have retained their integrity.

Major Bibliographic References

DeFord, D.H. *et al* . 1994. *300-FF-2 Operable Unit Technical Baseline Report* . BHI-00012. Bechtel Hanford Company, Richland, Washington.

Koshiba, R.E. 1972. *Large Sodium Fires Test Program, Forwarding of Management Report and Request for Action* . Correspondence from U.S. Atomic Energy Commission to Managers of Richland Operations Office, San Francisco Operations Office, and Idaho Operations Office. AEC-721606. U.S. Atomic Energy Commission, Washington D.C.

Westinghouse Hanford Company. 1993. *300 Area Building Catalog* . Richland, Washington.

Westinghouse Hanford Company. 1994. *Condition Assessment Survey Narrative, 3718-F* . Richland, Washington.